Sets & Steps
Math Practice & Worked Solutions

Algebra 1

Compound & Absolute Value Solution Sets | Algebra 1 | 3-Topic Bundle

3-topic bundle | 288 problems | Four activity formats

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01 Compound Inequalities

View individual product and its full preview

02 Absolute Value Equations and Inequalities

View individual product and its full preview

03 Inequality Graphs and Interval Notation

View individual product and its full preview

In every topic

Answer Bank Challenge	24 tasks
Grid Rounds	24 tasks
Match & Move	24 cards
Error Analysis & Strategy	24 tasks
Quick Answer Key and Full Worked Solutions	included
Teacher / Parent Use Guide and Terms of Use	included

Product previews

The following preview pages show the cover, all four activity formats, and worked examples for each included resource, in the listed order.

24 PDFs and 3 READMEs; 170 buyer PDF pages across the 3 products.

Preview pages are not included in the buyer page count. Check the list against resources you already own.

This is a fixed collection of the listed products. Purchase includes the existing individual resource files. To open a product's online preview, follow its title link and select View Preview.

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Sets & Steps
Math Practice & Worked Solutions

Algebra 1

Compound Inequalities

Solving Compound Inequalities | A1-U03-P06

96 problems · Four activity formats

Topic focus

Across 96 tasks this topic asks for compound solution set with connector and endpoint reasoning.

8 PDFs and a README; 48 buyer pages.

The following pages use the same questions, given data, and notation as the final files. Question/card serial numbers and internal IDs are omitted in this preview only. Table values and matching responses are retained. Full answer keys are not included.

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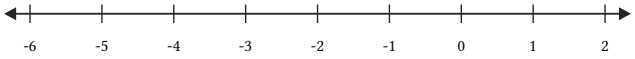
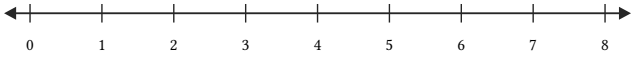
Algebra 1

Compound Inequalities

Name: _____ **Date:** _____ **Class:** _____

Answer each question and record the matching bank letter. Give exact values. Give the whole requested response, including any reasoning the question asks for.

Combine the conditions $(\frac{2}{3})x - 1 \geq -3$ AND $(\frac{1}{2})x + 2 < 5$. Find the exact common interval. Bank label: _____	Solve $x \leq 7$ AND $x < 4$. Bank label: _____
A course pass requires a grade of at least 70, unless an approved alternate assessment has been passed. Let A denote alternate passed; let g denote course grade. Model the two passing routes. Bank label: _____	Show the intersection of $x \leq -2$ and $x > -2$.  Bank label: _____
Combine the conditions $(-4 < x \leq 7)$ AND $(-4 \leq x < 6)$. Compute the exact intersection, paying attention at -4. Bank label: _____	Which scheduled hours 0, 2, 4, 6, and 8 satisfy $t < 2$ OR $t > 6$? Bank label: _____
Translate every part of $2 < x - 4 \leq 10$. Bank label: _____	Combine the conditions $(-2x \geq -8)$ OR $(-3x < -12)$. Solve and combine the rays.  Bank label: _____

Algebra 1

Compound Inequalities

Name: _____ **Date:** _____ **Class:** _____

Answer each question and show your reasoning in the workspace. Give exact values rather than decimals unless the question supplies a decimal. Give the whole requested response, including any reasoning the question asks for.

The target solution set is (−infinity,-2] union (5,infinity). Both displayed coefficients of x must be negative. Construct the target OR set so each component requires negative division.	Check -5 in the condition $x < -3$ OR $x > 6$.
Determine whether 0 belongs to $x < -4$ OR $x > 4$.	An integer code is accepted if it is nonpositive or at least 8. Let n denote integer code. State the connector, inequalities, and domain.
Test $x = 0$ and $x = 3$ after solving each part of $5 - 2x \geq 1$ OR $3x + 4 > 1$.	Work with $-8 < 3x + 1 \leq 7$. Solve the mixed-endpoint chain.

Algebra 1

Compound Inequalities

Name: _____ **Date:** _____ **Class:** _____

Begin at START. Answer the card, then find the matching final answer at the top of another card. Use the recording sheet for your reasoning. Visit each card once and continue to FINISH.

Incoming: The interval is $(3, 5]$.

The allowed values are natural numbers 1 through 8. Apply the condition $5n < 10$ OR $2n \geq 12$. Solve the OR condition and list permitted natural numbers in the window.

Your response: _____

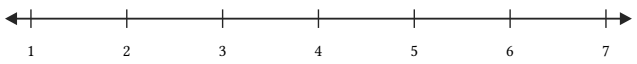
Incoming: The set is $\{1, 6, 7, 8\}$.

Solve $-3 < x + 2 < 5$.

Your response: _____

Incoming: The set is $x < -3$ OR $x \geq 4$.

Combine the conditions $(7 < 2x + 1)$ AND $(5x - 4 \leq 21)$. Solve the oppositely written bounds and graph the result.



Your response: _____

Incoming: The overlap is $[-6, 2)$.

Combine the conditions $((a + 2)x \leq -a - 2)$ OR $(x > 4)$. Given $a > -2$, solve the OR condition.

Your response: _____

Incoming: The set is $\{1, 2, 3, 5, 6, 7\}$.

Rewrite $7 > 2x - 1 \geq -5$ in increasing order and solve.

Your response: _____

Incoming: The interval is $-1 \leq x < 3$.

Solve $-2 < -x \leq 5$ and write the bounds in increasing order.

Your response: _____

Algebra 1

Compound Inequalities

Name: _____ **Date:** _____ **Class:** _____

Evaluate the supplied statement or method. Say whether it is correct, repair it if it is not, and verify the result exactly. Not every prompt contains an error.

For $x > -5$ OR $x \geq 2$, *a* student keeps only $x \geq 2$, claiming that the stricter bound must be used. Explain why 'stricter' is the wrong union rule.

Admission is free for children under 5 or for members who are at least 65. Let a denote age in years; let m denote membership status. Translate the two eligibility routes without treating age alone as sufficient in the second route. Explicitly select AND or OR (including any nested connector), and justify why that logic matches the stated conditions.

Let A be the condition $x < 0$ and B the condition $x > 0$. Edit B to $x \geq 0$ and compare before and after.

For integer n, let A be the condition $n < 3.5$ and B the condition $n \leq 3$. Compare AND and OR over the stated integer domain.

Compound Inequalities

Full Worked Solutions - excerpt

Worked example

Problem. Combine the conditions $((\frac{2}{3})x - 1 \geq -3)$ AND $((\frac{1}{2})x + 2 < 5)$. Find the exact common interval.

Answer. The solution is $x \geq -3$ AND $x < 6$, or $[-3, 6)$.

Explanation and check.

Solving the fraction inequalities gives the two stated bounds.

Worked example

Problem. Solve $x \leq 7$ AND $x < 4$.

Answer. The result is $x < 4$.

Explanation and check.

The strict bound at 4 is the more restrictive upper condition.

Sets & Steps
Math Practice & Worked Solutions

Algebra 1

Absolute Value Equations and Inequalities

Solving Absolute Value Inequalities | A1-U03-P07

96 problems · Four activity formats

Topic focus

Across 96 tasks this topic asks for exact distance condition or solution set with complete case reasoning.

8 PDFs and a README; 58 buyer pages.

The following pages use the same questions, given data, and notation as the final files. Question/card serial numbers and internal IDs are omitted in this preview only. Table values and matching responses are retained. Full answer keys are not included.

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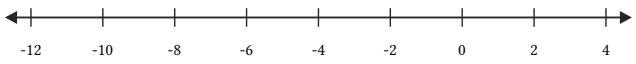
Algebra 1

Absolute Value Equations and Inequalities

Name: _____ **Date:** _____ **Class:** _____

Answer each question and record the matching bank letter. Give exact values. A value without its unit is not a complete answer.

Reconstruct the parameterized symmetric interval. target set: $[a-r, a+r]$ with $r > 0$; form restriction: closed inside condition Bank label: _____	Construct a valid absolute-value inequality whose solution is empty. target set: empty set; form restriction: strict inside condition with radius 0 Bank label: _____
Find all x. condition: $\lvert 4x \rvert \le 12$ Bank label: _____	Find all x satisfying $\lvert 7\text{-}x \rvert = 4$. Bank label: _____
Solve and graph the result.  condition: $\left\lvert \left(\frac{1}{2}\right)x + 2 \right\rvert < 3$ Bank label: _____	Isolate and solve both branches. equation: $3\lvert -2x - 4 \rvert + 6 = 30$ Bank label: _____
Find every solution of $\lvert x - 3 \rvert = 2$. Bank label: _____	Classify and solve $\lvert x - 4 \rvert = 0$. Bank label: _____

Algebra 1

Absolute Value Equations and Inequalities

Name: _____ **Date:** _____ **Class:** _____

Answer each question and show your reasoning in the workspace. Give exact values rather than decimals unless the question supplies a decimal. A value without its unit is not a complete answer.

Normalize the outer operations and solve.

equation: $2\,|x - 4| + 1 = 11$

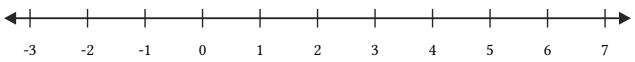
Determine the solution set without an invalid case split.

equation: $-\,2\,|x - 6| = 4$

Interpret the condition in x-units, giving its center and radius.

condition: $|2x - 6| \le 8$

Construct the required scaled condition.



membership constraints: include -1, include 5, exclude 6, both included points are endpoints, interior coefficient 2

Write the model and list ages.

context: An integer age is within 2 years of age 15, including both limits.; quantity: a years, integer

Describe $|t| = 6$ without solving it.

Algebra 1

Absolute Value Equations and Inequalities

Name: _____ **Date:** _____ **Class:** _____

Begin at START. Answer the card, then find the matching final answer at the top of another card. Use the recording sheet for your reasoning. Visit each card once and continue to FINISH.

Incoming: The solution is $-2 < x < 10$.

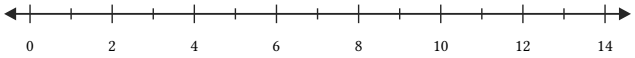
Find midpoint, radius, and the corresponding condition.

target set: $x \leq -\frac{2}{3}$ OR $x \geq \frac{10}{3}$; form restriction: closed outside condition

Your response: _____

Incoming: Use $|x - \frac{4}{3}| \geq 2$.

Use distance to solve and display the rays.

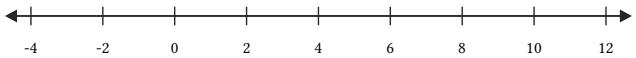


condition: $|7 - x| > 5$

Your response: _____

Incoming: The solution is $x \leq 2$ OR $x \geq 6$.

Find the open interval and mark its graph endpoints.



condition: $|-0.5x + 2| < 3$

Your response: _____

Incoming: The roots are x = -6 and $x = 4$.

Clear the outer divisor and find the closed interval.

condition: $\frac{|x-6|}{2} \leq 4$

Your response: _____

Incoming: The only solution is x = 3.

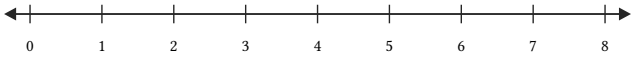
Give the exact interval.

condition: $|x - 1| \leq \frac{5}{2}$

Your response: _____

Incoming: Use $|x - 2| \leq 0.8$.

Graph and state $|x - 4| \leq 2$.



Your response: _____

Algebra 1

Absolute Value Equations and Inequalities

Name: _____ **Date:** _____ **Class:** _____

Evaluate the supplied statement or method. Say whether it is correct, repair it if it is not, and verify the result exactly. Not every prompt contains an error.

Apply the missing contextual step.

Supplied solution steps:

1. $|t - 3| > 5$
2. $t \geq 0$ hours
3. student answer $t < -2$ or $t > 8$

Correct the center and interval.

Supplied solution steps:

1. $|x + 4| < 2$
2. student center 4
3. answer $2 < x < 6$

State and prove the containment relation.

condition A: $|x - a| \leq r$; condition B: $|x - a| \leq s$, with $0 < r < s$

Absolute Value Equations and Inequalities

Full Worked Solutions - excerpt

Worked example

Problem. Reconstruct the parameterized symmetric interval.

target set: $[a-r, a+r]$ with $r>0$; form restriction: closed inside condition

Answer. Use $|x-a| \leq r$.

Explanation and check.

The midpoint is a and the positive half-width is r.

Worked example

Problem. Construct a valid absolute-value inequality whose solution is empty.

target set: empty set; form restriction: strict inside condition with radius 0

Answer. Use $|x-1|<0$.

Explanation and check.

No distance is strictly below zero.

Sets & Steps
Math Practice & Worked Solutions

Algebra 1

Inequality Graphs and Interval Notation

Inequality Graphs and Interval Notation | A1-U03-P08

96 problems · Four activity formats

Topic focus

Across 96 tasks this topic asks for exact equivalent set representation with endpoint evidence.

8 PDFs and a README; 64 buyer pages.

The following pages use the same questions, given data, and notation as the final files. Question/card serial numbers and internal IDs are omitted in this preview only. Table values and matching responses are retained. Full answer keys are not included.

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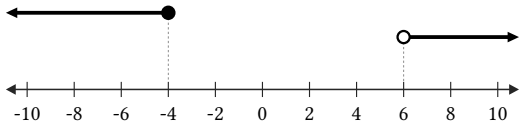
Algebra 1

Inequality Graphs and Interval Notation

Name: _____ **Date:** _____ **Class:** _____

Answer each question and record the matching bank letter. Give exact values. A value without its unit is not a complete answer.

Although the displayed window stops at -10 and 10, arrows continue. State the full set.



Bank label: _____

Represent the singleton $\{2\}$ on a number line.

Bank label: _____

From the complete menu, list every value in the represented ray.

Use the declared universe: exhaustive menu $\{-1, 0, 3, 7\}$. The represented real set is $[3, \infty)$. The scope of the supplied evidence is exhaustive declared finite universe.

Bank label: _____

Classify exactly when these encodings agree and otherwise give a symbolic witness.

The two encodings to compare are $[a, b]$ and $[a, b)$ with $a \le b$.

Bank label: _____

Algebra 1

Inequality Graphs and Interval Notation

Name: _____ **Date:** _____ **Class:** _____

Answer each question and show your reasoning in the workspace. Give exact values rather than decimals unless the question supplies a decimal. A value without its unit is not a complete answer.

List the integer members, preserving the open upper endpoint.

Use the declared universe: integers. The represented real set is $[-4, 3)$. The scope of the supplied evidence is all integers constrained by the bounded interval.

Construct the isolated fraction and the separate bounded interval on one exact scale.

Represent $\{-\frac{5}{2}\} \cup [\frac{1}{2}, \frac{7}{4})$ using quarter-unit ticks from -3 to 2.

Encode the union and preserve its one-point gap.

The supplied condition is $x < 2$ OR $x > 2$.

Are these sets equal? If not, exhibit a value from the differing region rather than an endpoint only.

Encoding A is $[-5, -1] \cup [2, 6]$. Encoding B is $[-5, 6]$.

Determine whether the apparent parameterized interval compression is valid.

Encoding A is $[a, b) \cup (b, c]$ with $a < b < c$. Encoding B is $[a, c]$.

Check every join before deciding whether the encodings are equivalent.

Encoding A is $[-4, -1) \cup [-1, 2) \cup \{2\}$. Encoding B is $[-4, 2]$.

Algebra 1

Inequality Graphs and Interval Notation

Name: _____ **Date:** _____ **Class:** _____

Begin at START. Answer the card, then find the matching final answer at the top of another card. Use the recording sheet for your reasoning. Visit each card once and continue to FINISH.

Incoming: The set is [0,infinity).

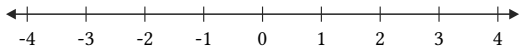
List every prime member of the represented interval.

Use the declared universe: prime integers. The represented real set is $(0, 12]$. The scope of the supplied evidence is all prime integers in the bounded interval.

Your response: _____

Incoming: The set is $\{2, 3, 5, 7, 11\}$.

The exact specification contains no shading and no isolated points. What is the set?



Your response: _____

Incoming: The set is $\{-2, -1, 0, 1, 2\}$.

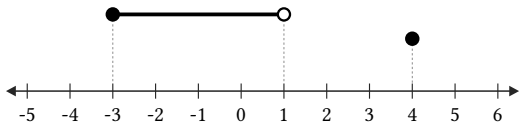
Translate $x \geq 0$ to interval notation.

The supplied condition is $x \geq 0$.

Your response: _____

Incoming: The set is $[-2, 7)$.

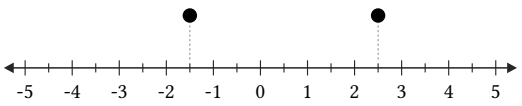
The line shades $[-3, 1)$ and separately marks 4. Encode the complete set.



Your response: _____

Incoming: The set is $\{-6, -3, 3, 6, 9\}$.

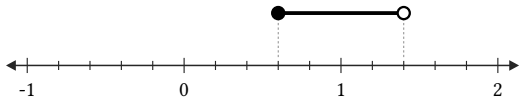
Only two filled points are shown on a half-unit scale. Encode them without shading between.



Your response: _____

Incoming: The interval is $(-1, 4)$.

The endpoints lie at the third and seventh ticks to the right of zero on *a*0.2 scale. Read coordinates, not tick numbers.



Your response: _____

Algebra 1

Inequality Graphs and Interval Notation

Name: _____ **Date:** _____ **Class:** _____

Evaluate the supplied statement or method. Say whether it is correct, repair it if it is not, and verify the result exactly. Not every prompt contains an error.

Verify the supplied graph using boundary, interior, and exterior values.

The original condition is $-1 < x \leq 4$. The proposed representation is hollow -1, filled 4, shading between. Use the supplied checks: -1; 0; 4; 5.

Audit the proposal across all possible orderings of the real parameters.

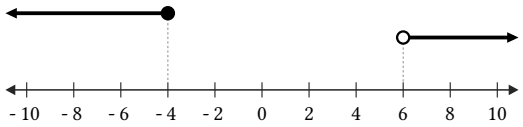
The original condition is $a \leq x \leq b$. The proposed representation is the closed segment $[a, b]$. Use the supplied checks: $a < b$; $a = b$; $a > b$.

Inequality Graphs and Interval Notation

Full Worked Solutions - excerpt

Worked example

Problem. Although the displayed window stops at -10 and 10, arrows continue. State the full set.



Answer. Use $(-\text{infinity}, -4]$ union $(6, \text{infinity})$.

Explanation and check.

Window edges are not endpoints; arrows indicate unbounded continuation.

Worked example

Problem. Represent the singleton $\{2\}$ on a number line.

Answer. Draw one filled point at 2 and no shaded segment or arrow.

Explanation and check.

A singleton contains one coordinate only, so adjacent values must stay unshaded.